**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**



In re Application of:

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Application No. 09/763,597 Art Unit: 1723

Filed: July 2, 2001 Examiner: Krishnan S. Menon

For: POROUS STRUCTURES AND METHOD AND APPARATUS FOR FORMING POROUS STRUCTURES

**PENDING CLAIMS AFTER AMENDMENTS MADE IN RESPONSE TO OFFICE ACTION DATED AUGUST 6, 2002**

1. A method of forming a porous medium comprising:

applying pressure to a first portion of a medium precursor including inorganic particles;

separately applying pressure to a second portion of the medium precursor; and

sinter bonding the inorganic particles together to form a porous medium having a porosity of about 50% or more.

2. A porous medium comprising:

a first portion having a first axial dimension and

a second portion having a second axial dimension, the second axial dimension being greater than the first axial dimension, wherein the first and second portions each have a predetermined porosity.

3. A porous medium comprising:

a porous sintered inorganic body portion having a first end and a porous sintered inorganic end portion closing the end of the body portion, the porous body portion and the porous end portion comprising a unitary structure and each portion having a predetermined porosity.

4. A porous element comprising:

a porous medium of sintered inorganic particles; and

a porous substrate, at least a portion of the sintered inorganic particles being disposed within pores of the porous substrate mechanically interlocking the porous medium and the porous substrate, wherein the porous element has a porosity of about 50% or more.

5. A process for making a porous element comprising:

contacting a porous substrate with a slurry including a liquid medium and inorganic particles; and

sintering the inorganic particles together within pores of the porous substrate to mechanically interlock the sintered inorganic particles to the porous substrate and form a porous element having a porosity of about 50% or more.

8. A porous medium comprising:

a mass of sintered inorganic particles having a porosity of 70% or more.

9. A method comprising:

forming a mixture including at least a liquid medium, a plurality of inorganic particles having a nominal first size and a plurality of inorganic particles having a nominal second size, said first size being less than the second size; and

sinter bonding the plurality of inorganic particles having a nominal first size and the plurality of inorganic particles having a nominal second size together to form a porous medium having a porosity of about 50% or more.

10. A porous medium comprising:

a first plurality of inorganic regions having a first nominal size;

a second plurality of second inorganic regions having a second nominal size, wherein the first nominal size is less than the second nominal size, and wherein the first plurality of inorganic regions is interspersed between the second plurality of inorganic regions; and

a plurality of bonds interposed between the first plurality of inorganic regions and the second plurality of inorganic regions, wherein the porous medium has a porosity of about 50% or more.

11. A mold apparatus comprising:

a mold cavity arranged to contain a slurry including inorganic particles;

a first die arranged to press a first portion of the slurry in the mold cavity; and a second die arranged to separately press a second portion of the slurry in the mold cavity, wherein the first die and the second die separately press the first portion and the second portion, respectively, to provide first and second portions of inorganic particles having predetermined densities.

12. The porous medium of claim 2 further comprising a third portion, wherein the porous medium has a generally hat-shaped configuration, the first portion forming a brim of the hat-shaped configuration, the second portion and the third portion forming a crown of the hat-shaped configuration, the portions having substantially similar porosities.

13. The porous medium of claim 3 wherein the porous medium has a generally hat-shaped configuration and wherein the body portion and the end portion form a crown of the hat-shaped configuration, the porous medium further comprising a flange portion forming a brim of the hat-shaped configuration wherein the flange portion, the body portion and the end portion comprise a unitary structure and the portions have substantially similar porosities.